

Claim Amendments

1. (currently amended) A method for purification of acrylic acid, which comprises the step of distilling a crude acrylic acid containing furfural and acrolein as impurities which is charged with an aldehyde treatment chemical, wherein the concentration ratio of furfural to acrolein by weight in said crude acrylic acid, prior to the crude acrylic acid being charged with said aldehyde treatment chemical, is adjusted so as to satisfy the following equation:

$$\underline{3} \leq (\text{furfural concentration by weight}) / (\text{acrolein concentration by weight}) \leq 100.$$

2. (currently amended) A method according to claim 1, wherein the concentration ratio of furfural to acrolein by weight in said crude acrylic acid is adjusted so as to satisfy the following equation:

$$\underline{2} \leq (\text{furfural concentration by weight}) / (\text{acrolein concentration by weight}) \leq 30.$$

3. (original) A method according to claim 1, wherein the amount of said aldehyde treatment chemical is not more than 8.0 mole per mole of furfural existing in said crude acrylic acid.

4. (original) A method according to claim 2, wherein the amount of said aldehyde treatment chemical is not more than 8.0 mole per mole of furfural existing in said crude acrylic acid.

5. (original) A method according to claim 1, wherein a hydrazine compound is used as said aldehyde treatment chemical.

6. (original) A method according to claim 2, wherein a hydrazine compound is used as said aldehyde treatment chemical.

7. (original) A method according to claim 3, wherein a hydrazine compound is used as said aldehyde treatment chemical.

8. (original) A method according to claim 4, wherein a hydrazine compound is used as said aldehyde treatment chemical.

9. (new) A method according to claim 5 and further comprising the steps of:

a) charging the crude acrylic acid with the hydrazine compound prior to the step of distilling the crude acrylic acid; and

b) reacting the hydrazine compound with the aldehydes of the crude acrylic acid such that, after said step of reacting and prior to said step of distilling, a concentration of said hydrazine compound in said crude acrylic acid is not more than 100 ppm by weight.

10. (new) A method according to claim 6 and further comprising the steps of:

a) charging the crude acrylic acid with the hydrazine compound prior to the step of distilling the crude acrylic acid; and

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b) reacting the hydrazine compound with the aldehydes of the crude acrylic acid such that, after said step of reacting and prior to said step of distilling, a concentration of said hydrazine compound in said crude acrylic acid is not more than 100 ppm by weight.

11. (new) A method according to claim 7 and further comprising the steps of:

a) charging the crude acrylic acid with the hydrazine compound prior to the step of distilling the crude acrylic acid; and

b) reacting the hydrazine compound with the aldehydes of the crude acrylic acid such that, after said step of reacting and prior to said step of distilling, a concentration of said hydrazine compound in said crude acrylic acid is not more than 100 ppm by weight.

12. (new) A method according to claim 8 and further comprising the steps of:

a) charging the crude acrylic acid with the hydrazine compound prior to the step of distilling the crude acrylic acid; and

b) reacting the hydrazine compound with the aldehydes of the crude acrylic acid such that, after said step of reacting and prior to said step of distilling, a concentration of said hydrazine compound in said crude acrylic acid is not more than 100 ppm by weight.

13. (new) A method for purification of acrylic acid, comprising the steps of:

a) providing a crude acrylic acid containing furfural and acrolein as impurities;

b) determining a ratio of a concentration of furfural to a concentration of acrolein;

c) determining whether the ratio of the concentration of furfural to the concentration of acrolein is within a preset range and, if so, continuing with said method;

d) determining whether the ratio of the concentration of furfural to the concentration of acrolein is outside said preset range and, if so, adjusting the ratio of the concentration of furfural to the concentration of acrolein to fall within said preset range;

e) charging said crude acrylic acid with a chemical that treats aldehydes, with said step of charging taking place after said steps of determining and after said step of adjusting; and

f) distilling said crude acrylic acid having said chemical that treats aldehydes.

14. (new) A method according to claim 13, wherein said preset range is: $(\text{furfural concentration by weight})/(\text{acrolein concentration by weight}) \leq 100$.

15. (new) A method according to claim 13, wherein said preset range is: $2 \leq (\text{furfural concentration by weight})/(\text{acrolein concentration by weight}) \leq 30$.

16. (new) A method according to claim 13, wherein said preset range is: $3 \leq (\text{furfural concentration by weight})/(\text{acrolein concentration by weight}) \leq 100$.

17. (new) A method according to claim 13, wherein said preset range is: $3 \leq (\text{furfural concentration by weight})/(\text{acrolein concentration by weight}) \leq 30$.

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18. (new) A method of claim 13, and further comprising the step of selecting an amount of said chemical that treats aldehydes to be not more than 8.0 moles per mole of furfural in said crude acrylic acid.

19. (new) A method of claim 13, and further comprising the step of selecting, as said chemical that treats aldehydes, a hydrazine compound.

20. (new) A method according to claim 19, and further comprising the steps of:

a) charging the crude acrylic acid with the hydrazine compound prior to the step of distilling the crude acrylic acid; and

b) reacting the hydrazine compound with the aldehydes of the crude acrylic acid such that, after said step of reacting and prior to said step of distilling, a concentration of said hydrazine compound in said crude acrylic acid is not more than 100 ppm by weight.

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